Integrated Science

Unit Title: Unit 1: INTEGUMENTARY SYSTEM

Stage 1: Desired Results

Standards & Indicators:

NJSLS Science:

- HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
- HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

Science and Engineering Practices(SEP)

Developing and Using Models- Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds. Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system. (HS-LS1-2)

Planning and Carrying Out Investigations Planning and carrying out in 9–12 builds on K–8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models. Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly. (HS-LS1-3)

Disciplinary Core Ideas (DCI)

- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

Crosscutting Concepts (CCC)

- **Systems and System Models** Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales. (HS-LS1-2)
- **Stability and Change -** Feedback (negative or positive) can stabilize or destabilize a system. (HS-LS1-3).
- **Scientific Investigations Use a Variety of Methods** Scientific inquiry is characterized by a common set of values that include: logical thinking, precision, open-mindedness, objectivity, skepticism, replicability of results, and honest and ethical reporting of findings. (HS-LS1-3)

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).	Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).	Digital tools differ in features, capacities, and styles. Knowledge of different digital

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		tools is helpful in selecting the best tool for a given task.

Central Idea/Enduring Understanding:

- Student investigates, examines and formulates an answer to the question, " *What is the description, structure and main function(s) of the* ***skin and its integral parts****."*
- Students develop and use a conceptual model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms of the ***Integumentary System***
- The crosscutting concepts of structure and function, energy and matter, systems and system models apply to organizing concepts of core ideas
- Students will investigate, analyze and compare the relationship between different organism's ***epidermis*** to simulate its components of systems at different scales
- Students use critical reading, analytical skills, research and models. Students also use engineering practices to demonstrate understanding of disciplinary core idea

Essential/Guiding Question:

- What is the description, structure and main function(s) of the skin and its integral parts?

Content:

- Functions of the Skin
- Structure of the Skin
- Appendages of the Skin
- The Integument and Its Relationship to Microorganisms
- Representative Disorders of the Skin, Hair, and Nails

Skills(Objectives):

- Describe the functions of the skin
- Develop and use a model to list the two basic layer of the skin and provide the function for each
- Explain how the skin serves as a channel of excretion
- Describe, illustrate, and explain the appendages of the skin
- Understand the role of microorganisms play relative to the skin
- Discuss and research the effects of aging of the skin
- Describe, discuss and research diseases and disorders of the skin, hair and nails

Interdisciplinary Connections:

- **ELA NJSLS**
  - SL.UM.11–12.5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
  - RI.CR.11–12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text.
  - W.IW.11–12.2**.** Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- **Math NJSLS**
  - MP 4. Model with mathematics.

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- HSN-Q.A.1-Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays

Stage 2: Assessment Evidence

Performance Task(s):

- Skin Layer Poster Lab (Replicating Skin Diagram)
- Skin and Hair Microscope Lab
- PowerPoint Research Presentation on Diseases and Disorders of the: Skin, Hair and Nails using digital software, books, and other resources

Other Evidence:

- Quizzes
- Test
- Lab Practicum

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Team building activities
- Cooperative learning activities
- Online learning websites
- Internet research
- Student driven activities

Resources:

- PowerPoint Notes
- *Body Structures and Functions 11th Edition Textbook* (by Ann Senisi and Elizabeth Fong)
- *Body Structures and Functions 13th Edition Textbook* (by Ann Senisi and Elizabeth Fong)
- Cdc.gov/cancer/skin/basic/info/prevention.htm (Worksheet #2)
- Hand sanitizers: Benefits and limitations
- Acne (for Kids) - Nemours KidsHealth
- http://www.delmarlearning.com/companions/content/1401809960/anim/anim5.asp
- http://www.expertpages.com/news/decubitus_ulcer.htm Review the causes and treatment for pressure ulcers.
- http://www.cooltheburn.com/learn/about/classify.html Review classifications of burns.
- http://www.burnresource.com/quiz.html Test your knowledge on burn safety issues.
- http://www.science.ubc.ca/~biomania/tutorial/skin/skin01a.htm Additional review of the layers of the skin.
- http://www.skincancer.org/ Web site of the Skin Cancer Foundation.Learn more about skin cancer, its causes, signs and symptoms, and prevention.
- http://health.yahoo.com/health/dc/007071/0.html Read additional information on pressure ulcers and their treatment.
- Explore the Brain - EnchantedLearning.com

LGBT and Disabilities Resources:

- LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth
- LGBTQ+ Books

DEI Resources:

- Learning for Justice
- GLSEN Educator Resources

	• Supporting LGBTQIA Youth Resource List • Respect Ability: Fighting Stigmas, Advancing Opportunities • NJDOE Diversity, Equity & Inclusion Educational Resources • Diversity Calendar

Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Students will be given advanced level reading material. Formative assessments will be used to determine students' level of comprehension. Students may be given an additional assignment when their work is completed. Students will be given choices when appropriate to choose their end product for a lesson.	Lessons will be designed based on student learning styles. Formative assessments will be used to determine students' level of comprehension. Students will be given choices when appropriate to choose their end product for a lesson.	Formative assessments will be used to determine students' level of comprehension. Students will be offered tutoring with the teacher or use weekly school tutoring. Teacher will develop an 8 minute model to help the student prior to referring student to I&RST Students will be given choices when appropriate to choose their end product for assessment.	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Unit Title: Unit 2: SKELETAL SYSTEM

Stage 1: Desired Results

Standards & Indicators:

NJSLS Science:

- HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

Science and Engineering Practices(SEP)

Developing and Using Models- Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds. Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system. (HS-LS1-2)

Disciplinary Core Ideas (DCI)

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- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)

Crosscutting Concepts (CCC)

- **Systems and System Models** Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales. (HS-LS1-2)

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.GCA.1	Collaborate with individuals to analyze a variety of potential solutions to climate change effects and determine why some solutions (e.g., political. economic, cultural) may work better than others (e.g., SL.11-12.1., HS-ETS1-1, HS-ETS1-2, HS-ETS1-4, 6.3.12.GeoGI.1, 7.1.IH.IPERS.6, 7.1.IL.IPERS.7, 8.2.12.ETW.3).	Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences.
9.4.12.IML.6	Use various types of media to produce and store information on climate change for different purposes and audiences with sensitivity to cultural, gender, and age diversity (e.g., NJSLSA.SL5).	Accurate information may help in making valuable and ethical choices.

Central Idea/Enduring Understanding:

- Student investigates, examines and formulates an answer to the question, " *What is the description, structure and main function(s) of the **Skeletal System**"*
- Students develop and use a conceptual model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms of the ***Skeletal System***
- The crosscutting concepts of structure and function, energy and matter, systems and system models apply to organizing concepts of core ideas
- Students will investigate, analyze and compare the relationship between different organism's ***bone*** structures to simulate its components of systems at different scales
- Students use critical reading, analytical skills, research and models. Students also use engineering practices to demonstrate understanding of disciplinary core ideas

Essential/Guiding Question:

- What is the description, structure and main function(s) of the Skeletal System

Content:

- Functions of the Skeletal System
- Structure and Formation of Bone
- Structure of Long Bone
- Growth of the Bone
- Bone Types
- Parts of the Skeletal System
- Joints and Related Structures
- Types of Motion of the joints

Skills(Objectives):

- List the 5 functions of the Skeletal System
- Explain the formation of bone
- Name and locate the main bones of the skeleton
- Name and define three major joints and compare and contrast the movement for each
- Describe the important difference between male and female pelvic bone
- Identify common bone and joint disorders

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• Disorders and diseases of the Bones and Joints and other Medical Related Disorders	• Define key words that relate to chapter #6

Interdisciplinary Connections:

- **ELA NJSLS**
  - SL.UM.11–12.5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
  - RI.CR.11–12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text.
  - W.IW.11–12.2**.** Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- **Math NJSLS**
  - MP 4. Model with mathematics.
  - HSN-Q.A.1**-**Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays

Stage 2: Assessment Evidence

Performance Task(s):	Other Evidence:
• Miniature Skeletal Model lab (**Forensic Science Experiment on File:** Building Up Human Skeleton Packet) • Enlarged Skeletal Model Lab Project • Mystery Square Lab (apply Scientific Method Skills) • Owl Pellet Lab • Chicken Bone Lab • Long Bone Poster Lab • Reading An X-Ray Lab (Guest Speakers: School Nurse(s)) https://www.epa.gov/radtown/radiation-and-medical-x-rays https://hps.org/publicinformation/ate/faqs/leadgarmentsfaq.html • PowerPoint Research Presentation on Diseases and Disorders of the Skeletal System using digital software, books, and other resources	• Quizzes • Test • Lab Practicum

Stage 3: Learning Plan

Learning Opportunities/Strategies:	Resources:
• Team building activities • Cooperative learning activities • Online learning websites • Internet research • Student driven activities	• PowerPoint Notes • *Body Structures and Functions 11th Edition* **Textbook** (by Ann Senisi and Elizabeth Fong) • *Body Structures and Function 11th Edition,* **Workbook**, by Ann Senisi and Elizabeth Fong • *Body Structures and Functions 13th Edition* **Textbook** (by Ann Senisi and Elizabeth Fong) • Prentice Hall, *"Exploring Physical Science,"* Chapter #1, pg. 7-9.

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	• Prentice Hall, "*Biology,"* by Miller and Levine, Chapter #36-1 LGBT and Disabilities Resources: • LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth • LGBTQ+ Books DEI Resources: • Learning for Justice • GLSEN Educator Resources • Supporting LGBTQIA Youth Resource List • Respect Ability: Fighting Stigmas, Advancing Opportunities • NJDOE Diversity, Equity & Inclusion Educational Resources • Diversity Calendar

Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Students will be given advanced level reading material. Formative assessments will be used to determine students' level of comprehension. Students may be given an additional assignment when their work is completed. Students will be given choices when appropriate to choose their end product for a lesson.	Lessons will be designed based on student learning styles. Formative assessments will be used to determine students' level of comprehension. Students will be given choices when appropriate to choose their end product for a lesson.	Formative assessments will be used to determine students' level of comprehension. Students will be offered tutoring with the teacher or use weekly school tutoring. Teacher will develop an 8 minute model to help the student prior to referring student to I&RST Students will be given choices when appropriate to choose their end product for assessment.	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Unit Title: Unit 3: MUSCULAR SYSTEM

Stage 1: Desired Results

Standards & Indicators:

NJSLS Science:

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- HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
- HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

Science and Engineering Practices(SEP)

Developing and Using Models- Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds. Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system. (HS-LS1-2)

Planning and Carrying Out Investigations Planning and carrying out in 9–12 builds on K–8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models. Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly. (HS-LS1-3)

Disciplinary Core Ideas (DCI)

- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

Crosscutting Concepts (CCC)

- **Systems and System Models** Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales. (HS-LS1-2)
- **Stability and Change -** Feedback (negative or positive) can stabilize or destabilize a system. (HS-LS1-3).
- **Scientific Investigations Use a Variety of Methods** Scientific inquiry is characterized by a common set of values that include: logical thinking, precision, open-mindedness, objectivity, skepticism, replicability of results, and honest and ethical reporting of findings. (HS-LS1-3)

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.).	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.
9.4.12.TL.4	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6).	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.

Central Idea/Enduring Understanding:

- Student investigates, examines and formulates an answer to the question, " *What is the description, structure and main function(s) of the **MuscularSystem**"*

Essential/Guiding Question:

- What is the description, structure and main function(s) of the Muscular System

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- Students develop and use a conceptual model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms of the ***Muscular-Skeletal System***
- The crosscutting concepts of structure and function, energy and matter, systems and system models apply to organizing concepts of core ideas
- Students will investigate, analyze and compare the relationship between different organism's ***muscular*** structure to simulate its components of systems at different scales
- Students use critical reading, analytical skills, research and models. Students also use engineering practices to demonstrate understanding of disciplinary core ideas

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Content:

- Types of Muscles
- Characteristics of muscles
- Muscle attachment and functions
- Sources of energy and heat
- Contraction of Skeletal Muscles
- Muscle Fatigue
- Principal Skeletal Muscles
- Muscles of the Head and Neck
- Muscles of the Upper Extremities
- Muscles of the Trunk
- Muscles of the Lower Extremities
- How Exercise and Training Change Muscles
- Massage Muscles and Electrical Stimulation
- Intramuscular Injections
- MusculoSkeletal Disorders

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Skills(Objectives):

- Describe the microscopic structure of skeletal muscle and explain the role of microfilaments
- Describe, draw, label and provide the function of the three main types of muscle
- List the four characteristics of muscles and define each
- Explain how pairs of muscles work together
- Locate and identify the important skeletal muscles of the human body
- Define isotonic, isometric contractions and muscle tone as these terms apply to skeletal muscle
- Define oxygen debt and muscle fatigue and predict causes of muscle fatigue
- Explain and demonstrate the different muscular body movements
- Locate, identify, draw and label the five parts of muscle attachment
- Explain the importance of nerve supply, exercise, and training as it relates to keeping healthy muscles
- Discuss bodybuilding, its affects, both pro and con
- Explain and discuss diseases and disorders of the muscle

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Interdisciplinary Connections:

- **ELA NJSLS**
  - SL.UM.11–12.5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
  - RI.CR.11–12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text.
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- **Math NJSLS**
  - MP 4. Model with mathematics.
  - HSN-Q.A.1-Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays

Stage 2: Assessment Evidence

Performance Task(s):

- Muscle Man lab
- Types of Muscle Cells Lab
- Life Size Body Works Lab (**Skeletal-Muscular Replication Lab)**
- Chicken Wing Anatomy Lab
- https://www.northallegheny.org/cms/lib/PA01001119/Centricity/Domain/1235/MuscularSystemWebquest.doc
- PowerPoint Research Presentation on Diseases and Disorders of the Muscular System using digital software, books, and other resources
- How Do Your Muscles Work Lab

Other Evidence:

- Quizzes
- Test
- Lab Practicum

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Team building activities
- Cooperative learning activities
- Online learning websites
- Internet research
- Student driven activities

Resources:

- *Body Structure and Functions 11 th Editio*n, Textbook, by Ann Senisi and Elizabeth Fong
- *Body Structures and Functions 13th Edition Textbook* (by Ann Senisi and Elizabeth Fong)
- *Body Structure and Functions 11 th Edition*, Workbook, by Ann Senlsi and Elizabeth Fong
- Power Point Notes
- *Prentice Hall Biology*, by Miller and Levine: Chapter #36-2, "Skeletal. Muscular, and integumentary System."
- *Prentice Hall Biology*, by Miller and Levine: Chapter #39/pg. 999, "Endocrine and Reproductive System"
- Free Science Worksheets
- https://health.howstuffworks.com/human-body/systems/musculoskeletal/muscle.htm#pt3

LGBT and Disabilities Resources:

- LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth
- LGBTQ+ Books

DEI Resources:

- Learning for Justice
- GLSEN Educator Resources
- Supporting LGBTQIA Youth Resource List
- Respect Ability: Fighting Stigmas, Advancing Opportunities

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	• NJDOE Diversity, Equity & Inclusion Educational Resources • Diversity Calendar

Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
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Unit Title: Unit 4: CENTRAL NERVOUS SYSTEM

Stage 1: Desired Results

Standards & Indicators:

NJSLS Science:

- HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
- HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

Science and Engineering Practices(SEP)

Developing and Using Models- Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds. Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system. (HS-LS1-2)

Planning and Carrying Out Investigations Planning and carrying out in 9–12 builds on K–8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models. Plan and conduct an investigation individually and collaboratively to produce data to serve as the

basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly. (HS-LS1-3)

Disciplinary Core Ideas (DCI)

- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

Crosscutting Concepts (CCC)

- **Systems and System Models** Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales. (HS-LS1-2)
- **Stability and Change -** Feedback (negative or positive) can stabilize or destabilize a system. (HS-LS1-3).
- **Scientific Investigations Use a Variety of Methods** Scientific inquiry is characterized by a common set of values that include: logical thinking, precision, open-mindedness, objectivity, skepticism, replicability of results, and honest and ethical reporting of findings. (HS-LS1-3)

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.).	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.
9.4.12.TL.4	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6).	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.

Central Idea/Enduring Understanding:

- Student investigates, examines and formulates an answer to the question, " *What is the description, structure and main function(s) of the **Central Nervous System**"*
- Students develop and use a conceptual model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms of the ***Central Nervous System***
- The crosscutting concepts of structure and function, energy and matter, systems and system models apply to organizing concepts of core ideas
- Students will investigate, analyze and compare the relationship between different organism's ***brain*** to simulate its components of systems at different scales
- Students use critical reading, analytical skills, research and models. Students also use

Essential/Guiding Question:

- What is the description, structure and main function(s) of the Central Nervous System

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engineering practices to demonstrate understanding of disciplinary core ideas	
Content: ● **Introduction of the Nervous System** ● **Division of the Nervous System** ● **The Brain** ● **Cerebrum** ● **Diencephalon** ● **Cerebellum** ● **Brain Stem** ● **Spinal Cord** ● **Disorders of the Central Nervous System and Spinal Cord Injury**	**Skills(Objectives):** ● Describe the function of the central nervous system ● List the three main divisions of the central nervous system ● Name the two main types of nerve cells and provide the function for each ● Identify, draw, label and provide the function for a neuron ● Identify and indicate the function of the major regions of the cerebral hemispheres, brain stem, and cerebellum of the human brain ● Define synapse and understand its role relative to the brain through a video, model or diagram ● Identify and indicate the function of a diencephalon and its major parts ● Provide the main function of the spinal cord ● Explain and discuss diseases and disorders of the brain ● List the four lobes of the brain and provide the location and function for each

Interdisciplinary Connections:

- **ELA NJSLS**
  - SL.UM.11–12.5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
  - RI.CR.11–12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text.
  - W.IW.11–12.2**.** Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- **Math NJSLS**
  - MP 4. Model with mathematics.
  - HSN-Q.A.1-Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays

Stage 2: Assessment Evidence

Performance Task(s): ● The Human Skull Assembly Lab by RayO'Bannon ● Solving Case Studies (team activity) ● Constructing a Neuron Lab ● Brain Cap Lab ● PowerPoint Research Presentation on Diseases and Disorders of the Central Nervous System using digital software, books, and other resources	**Other Evidence:** ● Quizzes ● Test ● Lab Practicum

Integrated Science

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Team building activities
- Cooperative learning activities
- Online learning websites
- Internet research
- Student driven activities

Resources:

- *Body Structure and Functions 11th Edition,* Textbook, by Ann Senisi and Elizabeth Fong
- *Body Structure and Functions 11 th Edition,* Workbook, by Ann Senisi and Elizabeth Fong
- *Body Structures and Functions 13th Edition Textbook* (by Ann Senisi and Elizabeth Fong)
- PowerPoint Notes
- *Prentice Hall Biology*, by Miller and Levine: Chapter #35-2;35-3, Guided Reading and Study Workbook
- Modern Biology, by James H.Otto and Albert Towle, "The Structure Unit of.Life."
- **Enhance Learning**
- **Explore the Brain**
- **NeuroScience Resources for Kids**

LGBT and Disabilities Resources:

- LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth
- LGBTQ+ Books

DEI Resources:

- Learning for Justice
- GLSEN Educator Resources
- Supporting LGBTQIA Youth Resource List
- Respect Ability: Fighting Stigmas, Advancing Opportunities
- NJDOE Diversity, Equity & Inclusion Educational Resources
- Diversity Calendar

Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Students will be given advanced level reading material. Formative assessments will be used to determine students' level of comprehension. Students may be given an additional assignment when their work is completed. Students will be given choices when appropriate to choose their end product for a lesson.	Lessons will be designed based on student learning styles. Formative assessments will be used to determine students' level of comprehension. Students will be given choices when appropriate to choose their end product for a lesson.	Formative assessments will be used to determine students' level of comprehension. Students will be offered tutoring with the teacher or use weekly school tutoring. Teacher will develop an 8 minute model to help the student prior to referring student to I&RST Students will be given choices when appropriate to choose	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following::

		their end product for assessment.	Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Unit Title: Unit 5: PERIPHERAL AND AUTONOMIC NERVOUS SYSTEM

Stage 1: Desired Results

Standards & Indicators:

NJSLS Science:

- HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
- HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

Science and Engineering Practices(SEP)

Developing and Using Models- Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds. Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system. (HS-LS1-2)

Planning and Carrying Out Investigations Planning and carrying out in 9–12 builds on K–8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models. Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly. (HS-LS1-3)

Disciplinary Core Ideas (DCI)

- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

Crosscutting Concepts (CCC)

- **Systems and System Models** Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales. (HS-LS1-2)
- **Stability and Change -** Feedback (negative or positive) can stabilize or destabilize a system. (HS-LS1-3).
- **Scientific Investigations Use a Variety of Methods** Scientific inquiry is characterized by a common set of values that include: logical thinking, precision, open-mindedness, objectivity, skepticism, replicability of results, and honest and ethical reporting of findings. (HS-LS1-3)

Career Readiness, Life Literacies and Key Skills

Integrated Science

Standard	Performance Expectations	Core Ideas
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.).	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.
9.4.12.TL.4	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6).	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.

Central Idea/Enduring Understanding:

- Student investigates, examines and formulates an answer to the question, " *What is the description, structure and main function(s) of the* ***Peripheral and Autonomic Nervous system***
- Students develop and use a conceptual model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms of the ***Peripheral and Autonomic Nervous system***
- The crosscutting concepts of structure and function, energy and matter, systems and system models apply to organizing concepts of core ideas
- Students will investigate, analyze and compare the relationship between different organism's ***cranial and spinal*** structures to simulate its components of systems at different scales
- Students use critical reading, analytical skills, research and models. Students also use engineering practices to demonstrate understanding of disciplinary core ideas

Essential/Guiding Question:

- What is the description, structure and main function(s) of the Peripheral and Autonomic Nervous system

Content:

- Introduction of the Peripheral Nervous System
- Nerves
- Cranial and Spinal Nerves
- Autonomic Nervous System
- Disorders of the Peripheral Nervous System

Skills(Objectives):

- Distinguish the difference between the Peripheral and Autonomic Nervous System
- List the three types of nerves and provide the function for each
- Provide the number of the cranial and spinal nerves in the body
- Understand how the cranial and spinal nerves are named .
- Describe the functions of the cranial and spinal nerves
- List the four major spinal nerve plexus and provide Its function and main nerve for each
- Distinguish the difference between the sympathetic and parasympathetic nervous system
- Explain and discuss disease and disorders of the peripheral nervous system•

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Interdisciplinary Connections:

- **ELA NJSLS**
  - SL.UM.11–12.5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
  - RI.CR.11–12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text.
  - W.IW.11–12.2**.** Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- **Math NJSLS**
  - MP 4. Model with mathematics.
  - HSN-Q.A.1-Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays

Stage 2: Assessment Evidence

Performance Task(s):

- Online Reaction Time test
- Cranial/Spinal Nerve Poster Lab
- Team Case Studies
- Observing Nervous Responses Lab
- PowerPoint Research Presentation on Diseases and Disorders of the Peripheral and Autonomic Nervous System using digital software, books, and other resources

Other Evidence:

- Quizzes
- Test
- Lab Practicum

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Team building activities
- Cooperative learning activities
- Online learning websites
- Internet research
- Student driven activities

Resources:

- *Body Structure and Functions 11th Edition*, Textbook. by Ann Senisi and Elizabeth F*ong*
- Body Structures and Functions 13th Edition Textbook (by Ann Senisi and Elizabeth Fong)
- *Body Structure and Functions 11th Edition*, Workbook. by Ann Senisi and Elizabeth Fong
- PowerPoint Notes
- *Prentice Hall Biology*, by Miller and Levine: Chapter #35, "The Nervous System
- https://www.enchantedlearning.com/subjects/anatomy/brain/index.shtml

LGBT and Disabilities Resources:

- LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth
- LGBTQ+ Books

DEI Resources:

- Learning for Justice
- GLSEN Educator Resources
- Supporting LGBTQIA Youth Resource List

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	• Respect Ability: Fighting Stigmas, Advancing Opportunities • NJDOE Diversity, Equity & Inclusion Educational Resources • Diversity Calendar

Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Students will be given advanced level reading material. Formative assessments will be used to determine students' level of comprehension. Students may be given an additional assignment when their work is completed. Students will be given choices when appropriate to choose their end product for a lesson.	Lessons will be designed based on student learning styles. Formative assessments will be used to determine students' level of comprehension. Students will be given choices when appropriate to choose their end product for a lesson.	Formative assessments will be used to determine students' level of comprehension. Students will be offered tutoring with the teacher or use weekly school tutoring. Teacher will develop an 8 minute model to help the student prior to referring student to I&RST Students will be given choices when appropriate to choose their end product for assessment.	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Unit Title: Unit 6: SPECIAL SENSES (5 SENSES)

Stage 1: Desired Results

Standards & Indicators:

NJSLS Science:

- HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
- HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

Science and Engineering Practices(SEP)

Developing and Using Models- Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds. Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system. (HS-LS1-2)

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Planning and Carrying Out Investigations Planning and carrying out in 9–12 builds on K–8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models. Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly. (HS-LS1-3)

Disciplinary Core Ideas (DCI)

- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

Crosscutting Concepts (CCC)

- **Systems and System Models** Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales. (HS-LS1-2)
- **Stability and Change -** Feedback (negative or positive) can stabilize or destabilize a system. (HS-LS1-3).
- **Scientific Investigations Use a Variety of Methods** Scientific inquiry is characterized by a common set of values that include: logical thinking, precision, open-mindedness, objectivity, skepticism, replicability of results, and honest and ethical reporting of findings. (HS-LS1-3)

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.).	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.
9.4.12.TL.4	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6).	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.

Central Idea/Enduring Understanding:

- Student investigates, examines and formulates an answer to the question, " *What is the description, structure and main function(s) of the* ***Special Senses*** of the human body"
- Students develop and use a conceptual model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms of the ***Special Senses Organs***
- The crosscutting concepts of structure and function, energy and matter, systems and system models apply to organizing concepts of core ideas
- Students will investigate, analyze and compare the relationship between different organism's

Essential/Guiding Question:

- What is the description, structure and main function(s) of the Special Senses of the human body

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organs of the ***Special Senses*** to simulate its components of systems at different scales ● Students use critical reading, analytical skills, research and models. Students also use engineering practices to demonstrate understanding of disciplinary core ideas	
Content: ● **Sensory Receptors** ● **Introduction of the Eye** ● **Pathway of Vision** ● **Eye Disorders** ● **Introduction of the Ear** ● **Pathway of Hearing** ● **Pathway of Equilibrium** ● **Loud Noise and Hearing Loss** ● **Ear Disorders** ● **Sense of Smell/The Nose** ● **Disorders of the Nose** ● **Sense of Taste/The Tongue**	**Skills(Objectives):** ● Understand the functions of the special senses of the human body ● Understand the functions of the sensory receptors all over the body ● Identify, draw, label and provide the functions of the parts of the eye ● Identify, draw, label and provide the functions of the parts of the ear ● Identify, draw, label and provide the functions of the parts of the tongue ● Identify, the main parts of the nose and describe its functions ● Trace the pathway of sound from the pinna to the temporal lobe ● Trace the pathway of vision from the cornea to the optic nerve ● Identify the "map" of the tongue and location of its taste buds ● Explain and discuss diseases and disorders of the eye, ear, nose and tongue of the human body
Interdisciplinary Connections: ● **ELA NJSLS** ○ SL.UM.11–12.5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. ○ RI.CR.11–12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text. ○ W.IW.11–12.2**.** Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. ● **Math NJSLS** ○ MP 4. Model with mathematics. ○ HSN-Q.A.1-Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays	
Stage 2: Assessment Evidence	
Performance Task(s): ● Cow Eyeball Dissection lab ● Parts of the Eye Poster ● I'm All Ears Lab (Construction) ● PowerPoint Research Presentation on Diseases and Disorders of the Special Senses (**5 senses)**	**Other Evidence:** ● Quizzes ● Test ● Lab Practicum

using digital software, books, and other resources	

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Team building activities
- Cooperative learning activities
- Online learning websites
- Internet research
- Student driven activities

Resources:

- *Body Structure and Functions 11th Edition*, Textbook. by Ann Senisi and Elizabeth F*ong*
- *Body Structure and Functions 11th Edition*, Workbook. by Ann Senisi and Elizabeth Fong
- PowerPoint Notes
- https://www.exploratorium.edu/learning_studio/cow_eye/
- https://faculty.washington.edu/chudler/chsense.html
- http://studyjams.scholastic.com/studyjams/jams/science/human-body/hearing.htm
- https://www.enchantedlearning.com/subjects/anatomy/brain/index.shtml
- https://www.toledo-bend.com/colorblind/Ishihara/
- Web quest for 5 senses

LGBT and Disabilities Resources:

- LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth
- LGBTQ+ Books

DEI Resources:

- Learning for Justice
- GLSEN Educator Resources
- Supporting LGBTQIA Youth Resource List
- Respect Ability: Fighting Stigmas, Advancing Opportunities
- NJDOE Diversity, Equity & Inclusion Educational Resources
- Diversity Calendar

Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Students will be given advanced level reading material. Formative assessments will be used to determine students' level of comprehension. Students may be given an additional assignment when their work is completed. Students will be given choices when appropriate to choose their end product for a lesson.	Lessons will be designed based on student learning styles. Formative assessments will be used to determine students' level of comprehension. Students will be given choices when appropriate to choose their end product for a lesson.	Formative assessments will be used to determine students' level of comprehension. Students will be offered tutoring with the teacher or use weekly school tutoring. Teacher will develop an 8 minute model to help the student prior to referring student to I&RST	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include,

		Students will be given choices when appropriate to choose their end product for assessment.	but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Unit Title: Unit 7: NUTRITION

Stage 1: Desired Results

Standards & Indicators:

NJSLS Science:

- HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
- HS-LS1-6 Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon based molecules.

Science and Engineering Practices(SEP)

Planning and Carrying Out Investigations Planning and carrying out in 9–12 builds on K–8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models. Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly. (HS-LS1-3)

Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories. Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (HS-LS1-6)

Disciplinary Core Ideas (DCI)

- The sugar molecules thus formed contain carbon, hydrogen, and oxygen: their hydrocarbon backbones are used to make amino acids and other carbon-based molecules that can be assembled into larger molecules (such as proteins or DNA), used for example to form new cells. (HS-LS1-6)
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

Crosscutting Concepts (CCC)

- **Stability and Change -** Feedback (negative or positive) can stabilize or destabilize a system. (HS-LS1-3).

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- **Scientific Investigations Use a Variety of Methods** Scientific inquiry is characterized by a common set of values that include: logical thinking, precision, open-mindedness, objectivity, skepticism, replicability of results, and honest and ethical reporting of findings. (HS-LS1-3)
- **Energy and Matter** - Changes of energy and matter in a system can be described in terms of energy and matter flows into, out of, and within that system. (HS-LS1-6)

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.).	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.
9.4.12.TL.4	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6).	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.

Central Idea/Enduring Understanding:

- Student investigate, examine and formulate an answer to the question, " *What is a **nutrient** and how does it affect the human body?"*
- Students develop and use a conceptual model to illustrate the hierarchical organization of interacting systems and the ***nutrients*** that provide specific functions within multicellular organisms ***bio-chemical make-up***
- The crosscutting concepts of structure and function, energy and matter, systems and system models apply to organizing concepts of core ideas
- Students will investigate, analyze and compare the relationship between different organism's ***bio-chemical manufacture of nutrients*** to simulate its components of systems at different scales
- Students use critical reading, analytical skills, research and models. Students also use engineering practices to demonstrate understanding of disciplinary core ideas

Essential/Guiding Question:

- What is a nutrient and how does it affect the human body?

Content:

- Water
- Carbohydrates
- Lipids
- Proteins
- Minerals and Trace Elements
- Vitamins
- Fiber
- Recommended Daily Dietary Allowances
- Dietary Guidelines for Americans
- Nutrition Labels
- Food Poisoning
- Eating Disorders

Skills(Objectives):

- Understand the functions of the special senses of the human body
- Understand the functions of the sensory receptors all over the body
- Identify, draw, label and provide the functions of the parts of the eye
- Identify, draw, label and provide the functions of the parts of the ear
- Identify, draw, label and provide the functions of the parts of the tongue

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	• Identify, the main parts of the nose and describe its functions • Trace the pathway of sound from the pinna to the temporal lobe • Trace the pathway of vision from the cornea to the optic nerve • Identify the "map" of the tongue and location of its taste buds • Explain and discuss diseases and disorders of the eye, ear, nose and tongue of the human body

Interdisciplinary Connections:

- **ELA NJSLS**
  - SL.UM.11–12.5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
  - RI.CR.11–12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text.
  - W.IW.11–12.2**.** Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- **Math NJSLS**
  - MP 4. Model with mathematics.
  - HSN-Q.A.1**-**Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
• Food, Inc. Movie • MyPlate Lab • Food Lab • Science and Our Food Supply Lab book • PowerPoint Research Presentation on Diseases and Disorders of the Eating, Dietary ailments and Food Poisoning using digital software, books, and other resources	• Quizzes • Test • Lab Practicum

Stage 3: Learning Plan

Learning Opportunities/Strategies:	**Resources:**
• Team building activities • Cooperative learning activities • Online learning websites • Internet research • Student driven activities	• *Body Structure and Functions 11th Edition*, Textbook. by Ann Senisi and Elizabeth F*ong* • Body Structures and Functions 13th Edition Textbook (by Ann Senisi and Elizabeth Fong) • *Body Structure and Functions 11th Edition*, Workbook. by Ann Senisi and Elizabeth Fong • PowerPoint Notes • Choose My Plate PowerPoint • SuperSize Video • *Betty Crocker Cookbook for Good Carbs,* by http://s9__23/Cathy Leman, R.D. and Linda **R.** Yoakam, M.S., R.D., LD

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	• https://www.myfitnesspal.com/tools/bmr-calculator • https://www.neshaminy.org/cms/lib/PA01000466/Centricity/Domain/268/NUTRITION%20WEBQUEST%202017%20shortened%20version.docx LGBT and Disabilities Resources: • LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth • LGBTQ+ Books DEI Resources: • Learning for Justice • GLSEN Educator Resources • Supporting LGBTQIA Youth Resource List • Respect Ability: Fighting Stigmas, Advancing Opportunities • NJDOE Diversity, Equity & Inclusion Educational Resources • Diversity Calendar

Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Students will be given advanced level reading material. Formative assessments will be used to determine students' level of comprehension. Students may be given an additional assignment when their work is completed. Students will be given choices when appropriate to choose their end product for a lesson.	Lessons will be designed based on student learning styles. Formative assessments will be used to determine students' level of comprehension. Students will be given choices when appropriate to choose their end product for a lesson.	Formative assessments will be used to determine students' level of comprehension. Students will be offered tutoring with the teacher or use weekly school tutoring. Teacher will develop an 8 minute model to help the student prior to referring student to I&RST Students will be given choices when appropriate to choose their end product for assessment.	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Integrated Science

Pacing Guide

Course Name	Resource **Textbook: Body Structures and Functions by Ann Senisi and Elizabeth Fong**	Content Standards
UNIT 1 Integumentary System: Skin **10 days**	**CHAPTERS #5** Unit Online Assessment: Chapter #5: Google Form Test	• **HS-LS1-2** • **HS-LS1-3**
UNIT 2 Skeletal System **15 days**	**CHAPTERS #6** Unit Online Assessment: Chapter #6: Google form Test	• **HS-LS1-2** • **LS1.A**
UNIT 3 Muscular System **15 days**	**CHAPTERS #7** Unit Online Assessment: Chapter #7: Google Form Test	• **HS-LS1-2** • **HS-LS1-3**
UNIT 4 Central Nervous System **15 days**	**CHAPTERS #8** Unit Online Assessment: Chapter #8: Google Form Test	• **HS-LS1-2** • **HS-LS1-3**
UNIT 5 Peripheral and Autonomic Nervous System (Spinal Cord) **7 days**	**CHAPTER #9** Unit Online Assessment: Chapter #9: Google Form Test	• **HS-LS1-2** • **HS-LS1-3**
UNIT 6 Special Senses (5 senses) **15 days**	**CHAPTER #10** Unit Online Assessment: Chapter #10: Google Form Test	• **HS-LS1-2** • **HS-LS1-3**
UNIT 7 Nutrition **13 days**	**CHAPTER #19** Unit Online Assessment: Chapter #19: Google Form Test	• **HS-PS1-3** • **HS-PS1-6**